NOTES.

It is announced that Signor Schiaparelli has been elected an associate of the Paris Academy of Sciences in succession to the late Baron Nordenskiöld.

The Albert medal of the Society of Arts for the present year has, with the approval of H.R.H. the Prince of Wales, president of the Society, been awarded to Prof. Alexander Graham Bell, "for his invention of the telephone."

The Panama Canal Bill, which was adopted by the United States Senate a few days ago (p. 205), has been accepted by the House of Representatives and signed by President Roosevelt, so that it has now become law.

The summer excursion of the Geologists' Association this year will be to the Ipswich and Norwich districts, the directors being Mr. W. Whitaker, F.R.S., and Mr. F. W. Harmer. The party will leave London on Saturday, July 26, for Ipswich, which will be the headquarters until July 31. Norwich will then be the centre until August 5, when the party will return to London.

The council of the Society of Arts offers the Fothergill prize of 50*l.* and a silver medal for a paper on "Existing Laws, By-laws and Regulations relating to Protection from Fire, with Criticisms and Suggestions." The paper should consist of about eight to ten thousand words, and be written with a view to its being read and discussed at an ordinary meeting of the Society. Papers submitted for the prize must be sent to the secretary on or before October 1. Each paper must be typewritten, and bear a motto, the name of the writer being enclosed in a sealed envelope with a similar motto. The judges will be appointed by the council.

Reports of recent volcanic disturbances and related effects continue to be published. A despatch from Honolulu says that a violent eruption from the Kilauea volcano took place on June 3. It is further stated that when the Mont Pelée eruption was at its height, and during the six hours St. Pierre was overwhelmed, there were marked magnetic disturbances in the observatory on Oahu Island. A telegram from Fort de France to the French Minister of the Colonies, dated June 26, says that the scientific expedition which was sent to Martinique considers that the destruction of St. Pierre was caused by a rush of gas at a very high temperature, travelling from north to south. The destruction of Le Prêcheur and Ste. Philomène is attributed to torrents of mud, which overwhelmed them. No appreciable sinking of the sea bottom near the coast has been found.

Evidence of the assistance given to agriculture by the Technical Instruction Committee of the Essex County Council is afforded by the report just published on the various branches of work carried on. Farmers within the administrative County of Essex can obtain from the County Laboratories, for a nominal fee, reports upon chemical, botanical and entomological specimens and materials. Thus, for the fee of one shilling for each subject, reports can be obtained upon the germinating power and purity of seed; the species of a weed or other plant, with a report on its nature and habits and any means of checking or destroying its growth; any disease affecting farm or garden crops; any insect or other pest affecting farm or garden crops, or stock, with advice as to its prevention or destruction. Work of this kind forms a very valuable part of the functions of Technical Instruction Committees in agricultural districts. The biological work carried on under the auspices of the committee has been of a very helpful character. To enable teachers in rural schools to obtain a knowledge of natural history sufficient to inspire interest in it in their pupils, class and field meetings were held during the year and proved very successful. The subject selected for systematic treatment was plant-life, considered in its broadest sense, so as to give the teacher-students a fairly interesting introduction to the wider subject of nature-study.

At the meeting of the French Society for the Encouragement of National Industry held on June 13, the Minister of Marine announced that, following the recommendation made at the congress held at Zurich in October, 1900, as to the adoption of an international system of screw gauges, he had, with the concurrence of his technical advisers, decided to render the new system a service regulation so far as it concerned the heads and worms of screws. He had accordingly given instructions that for all sizes used in the French navy the length should be made equal to 1·4 diameters plus 4 millimetres (L = 1·4d. + 4mm.); so that from any one part every bolt could be distinguished at first sight from the bolts of other dimensions, either by the head or by the body of the screw; and that, leaving out exceptional cases, the sizes should be determined by the above simple formula.

The twelfth international congress of the International Tramways Union and the second International Tramways and Light Railways Exhibition were opened at the Agricultural Hall, Islington, on Monday, by Mr. Gerald Balfour, President of the Board of Trade. Mr. Gerald Balfour, in proposing "The Union Internationale Permanante de Tramways," at the subsequent luncheon, remarked that in the industry represented by their own international union, he was afraid that this country had probably more to learn from distinguished friends who had come from the other side of the Channel than they had to learn from us. He hoped that this inferiority, of which he was painfully conscious, was not going to last for ever. In this country we had been taking a nap, but he thought he saw some signs of an awakening. It was with the introduction of the overhead trolley system that the supremacy of electric traction and light railways was established. He believed that this system was not so quickly appreciated in the United Kingdom as it was by our neighbours. The consequence was that we had undoubtedly got a little behind.

The annual general meeting of the Marine Biological Association of the United Kingdom was held in the rooms of the Royal Society on June 25. The officers and council elected for the year 1902-3 were as follows:—President, Prof. E. Ray Lankester, F.R.S.; hon. treasurer, Mr. J. A. Travers; hon. secretary, Dr. E. J. Allen; council, Mr. G. P. Bidder, Mr. G. C. Bourne, Mr. Francis Darwin, Prof. J. B. Farmer, Dr. G. H. Fowler, Dr. S. F. Harmer, Prof. W. A. Herdman, Prof. G. B. Howes, Mr. J. J. Lister, Prof. E. A. Minchin, Prof. C. Stewart, Prof. D'Arcy W. Thompson and Dr. R. N. Wolfenden. The following governors are also members of council:—Mr. J. P. Thomasson (the prime warden of the Fishmongers' Company), Mr. E. L. Beckwith (Fishmongers' Company), Sir J. Burdon Sanderson, Bart. (University of Oxford), Mr. A. E. Shipley (University of Cambridge), Prof. W. F. R. Weldon (British Association for the Advancement of Science). Special reference was made in the report of the council to the loss sustained by the Association through the death of Mr. Robert Bayly, one of the governors of the Association, whose generous support and valued assistance contributed very largely to the successful establishment of the laboratory at Plymouth.

Dean Hole presided at the conference on roses organised by the Royal Horticultural Society in connection with the Coronation Show at Holland House on Tuesday, June 24. He had much to say in praise of the blossoms with which his name is associated, and having commented on the value of the papers to be read, called upon Mr. J. G. Baker, F.R.S., to give an account of *Rosa stellata* and *R. minutifolia*, recently discovered in New Mexico and California respectively. These roses are characteristic, the first having its leaves, or rather the three terminal leaflets, arranged like those of a Potentilla and unlike any other allied species. *R. minutifolia*, as its name implies, has very small leaves which are deeply toothed. These forms are alike in having red flowers, and in habit they resemble the Scotch rose, *Rosa spinosissima*. Only the second species has as yet been grown in this country, and that with little success. The question of the origin of the hybrid tea rose was touched upon by the Rev. J. H. Pemberton in his general paper on this form. Mr. Alexander Dickson stated that as a result of almost a life's work in the hybridisation of roses he had not been able to reduce a single theory to a certainty, and not one feature as regards colour, shape or fragrance could the experimenter ensure in an artificial hybrid. The need for a strain of roses that will stand the English climate was emphasised by Mr. Edward Mawley. Many points of cultural interest were raised, and many papers will appear in the report which time did not permit of being read, such as those on "The Production of New Hybrid Roses," by M. Viviand-Morel, "Wild Asiatic Roses," by M. Maurice de Vilmorin, and "Recently Discovered Chinese Roses," by Mr. George Nicholson.

A PECULIAR appearance at and after sunset was noticed by a number of observers several evenings last week. Dr. C. B. Plowright, of King's Lynn, and some friends with him, observed after sunset a number of rose-red beams of light radiating upward in the western sky, with the sun as the centre. These beams were not of long duration, and changed in position and brilliancy in the course of a few minutes. Sometimes they extended 30° or 40° upwards towards the zenith. On Wednesday, June 25, the beams were brightest about 9.10 p.m. On Friday, 27th, the phenomenon lasted from about 8.50 to 9.10 p.m. After the beams died away, the upper part of the western sky was tinged by a delicate pink haze. Mr. A. R. Jenkin sends a similar account of the beams as seen by him at Trewirgie, Redruth, on June 27, at 8.45 p.m. He noticed at first "a pink glow low down in the south-east, exactly opposite the sun; this soon sent out streamers. Meanwhile, a pink patch of considerable extent had appeared about midway between the horizon and the zenith in the north-west above the sun, and this also quickly resolved itself into rays converging towards the sun corresponding to those in the east, so that at one time they could almost be traced right through the zenith, and one of the rays lower down to the north could be plainly seen right across from west to east. As the western glow increased so the eastern diminished, until at 9 p.m. there was nothing to be seen in the east, but in the west the rays were most striking. Appearing to rise out of a clear belt of lemon-yellow colour along the horizon, they extended high up into the sky. As the sun got further north below the horizon the rays rotated on their axis (the sun) in the opposite direction. They could be distinctly seen up to 9.20 p.m., when they had almost sunk into the belt on the horizon, which by this time was of a similar pink colour."

IT is officially declared that the statement recently made to the effect that the Meteorological Department in India has indicated the probability of a deficiency of rain, more especially in Gujerat, is incorrect. The Government of India have, however, decided not to make public the forecasts which the department submit to them from time to time, on account of the imperfect data on which such forecasts are necessarily based. The weekly reports which are sent home by the Government of India, and published in this country, give the most trustworthy indications that can be obtained, both of the actual facts and of the prospects for the future. The last of these reports, for the week ended June 22, stated that the monsoon had given heavy rain in the west coast districts, light rain in the Deccan and Sindh, and showers in Gujerat. Good rain has also fallen in Burma, Assam and Lower Bengal, and agricultural prospects up to the present are on the whole satisfactory.

THE discussion of the origin of eskers has led to a large amount of literature. Many geologists now believe that these winding ridges of glacial gravel are the product chiefly of the subglacial drainage of an ice-sheet. Mr. W. O. Crosby (*Proc.* Boston Soc. Nat. Hist., vol. xxx. May, 1902) seeks to show that under normal conditions the deposits of gravel and sand formed in a superglacial channel may be let down upon *terra firma* without obliteration and without loss of the distinctive features of an esker.

DR. S. HEPITES has recently issued the fifteenth volume (for 1899) of the *Analele* of the Meteorological Institute of Roumania. One of the most valuable memoirs contained in it deals with the rainfall of the kingdom, and is illustrated by a map drawn to the scale 1 : 1,000,000 and based on observations made during the fifteen years 1884-1898. Dr. Hepites also describes briefly six slight earthquakes felt during 1899.

EARLY last month the *Standard* and other newspapers contained reports of tremors and rumbling sounds observed on the night of June 3 chiefly in the west of Essex. The times given are not very exact, but were roughly about 11.15 and 11.45 p.m. The resemblance to earthquakes must have been somewhat close, several persons accustomed to earthquakes in other countries being convinced that the disturbances were of seismic origin. The long duration of the vibrations, however, and their apparent transmission through the air, point to an artificial origin, and there can be no doubt that they were caused by the firing of heavy guns that took place at the mouth of the Medway at about the times mentioned. The tremors were noticed and were attributed to earthquakes at places as far as North Mimms and Elstree in Hertfordshire, which are 46 miles from the mouth of the Medway, and at Little Shelford, near Cambridge, distant 55 miles.

THE third volume of the *Annales* of the National Observatory of Athens has been published recently. Besides the usual meteorological tables, it contains two memoirs by the director, Dr. D. Eginitis, one on the observation of shooting-stars at Athens during the years 1897–1899, and the other on the earthquakes felt in Greece during the year 1899. From the latter we learn that 567 earthquakes were recorded, the mean annual number for the six preceding years being 531. Of this large number, 421 were felt in Zante, though some were not entirely confined to that island. The most important earthquake was one that occurred on January 22 in the province of Triphylie on the west coast of the Peloponnesus. This was strong enough to throw down houses over a district 18½ miles long and 10 miles wide, though the total area disturbed was less than 15,000 square miles. It was recorded at Shide, in the Isle of Wight, the mean velocity to that station being 2·1 km. per second.

PHYSIOLOGISTS have during late years regarded hæmoglobin and its derivatives in the animal organism as occupying a somewhat analogous position to that of chlorophyll and its derivatives in the vegetable kingdom, a view which may be said to be the outcome of recent chemical and spectroscopical research. It is well known, for example, that these complex organic pigments produce characteristic absorption bands in the ultra-violet part of the spectrum. Just lately, however, it has been shown by MM. L. Bier and L. Marchlewski (*Bulletin International de l'Académie des Sciences de Cracovie*, April, 1902) that this fact is not apparent in the spectra of all the derivatives of the colouring matter of the blood (hæmoglobin); for these observers have demonstrated by photographs of the spectra of bilirubin, biliverdin, urobilin and proteinchrom that the characteristic bands in the violet part are absent. But from this observation we must not necessarily infer that these organic pigments are not derivatives of hæmoglobin, for, as these investigators point out, the characteristic absorption bands in the violet area of the spectrum produced by the complex molecule of hæmoglobin may not depend on the constitution of the nucleus forming the basis of this complicated mother substance, but may arise from certain atomic groups which may not appear in some of its derivatives.

A CORRESPONDENT directs attention to the absence of any reference to Dr. Gaskell's work in the note in our issue of June 19 (p. 184) on Prof. Patten's account of the affinities of Trematаspis. The same absence characterises Prof. Patten's paper, to which our remarks were restricted.

IN the geological series of publications issued by the Field Columbian Museum, Mr. E. S. Riggs describes the Triassic and Jurassic of the Rio Grande, Colorado, which have yielded so many remarkable dinosaurian remains. The paper is illustrated with some excellent photographic reproductions of the striking scenery of the district.

IN describing a species of "sand-fly" allied to *Ceratopogon albopunctatus*, Mr. W. R. College, in vol. xvii. part i. of the *Proceedings* of the Royal Society of Queensland, states that it is probably only the females of these irritating insects which attack human beings. Out of fifty specimens caught on the author's own hands, only one was a male. The sexes are readily distinguishable by the antennæ, which are plumose in the female and filiform in the male.

WE have received from the authors, Messrs. Eckel and Paulmier, a copy of a synopsis of the snakes of the north-eastern United States published in the *Bulletin* of the New York State Museum and forming the first instalment of a complete catalogue of the reptiles and amphibians of New York. In the present part the distinctions between venomous and harmless serpents are indicated in a clear manner, while the various species are well described and in many cases illustrated by figures of the head.

We have received from the authors copies of two papers relating to the iguanodons of Bernissart, in Belgium, and the nature of the country at the time of the entombment of their remains. The one, by Mr. L. F. de Pauw, who restored the skeletons, appears in vol. iv. of the *Memoires* of the Hainaut Scientific Society, while the other, by Prof. van den Broeck, is issued in the *Bulletin* of the Belgian Geological Society for the present year. Both writers support the view of Messrs. Cornet and Schmitz that the Bernissart iguanodons inhabited the margins of a lake, and not, as has been supposed, a narrow gorge cut in Carboniferous rocks and filled up by deposits of Wealden age. The features in the section which led to the promulgation of the latter view may be explained by earth-movements of post-Wealden age. Mr. Pauw has made an interesting restoration of a group of iguanodons round the old Bernissart lake, a photographic reproduction from which accompanies the memoir. The author believes that these reptiles often walked on all fours, especially when leaving the lake.

AMERICAN naturalists are devoting more and more attention to the mammals and other vertebrates of the Old World, and by means of vigorous collecting are adding largely to the list of species and races. In the *Proceedings* of the U.S. Museum, for instance, Mr. G. S. Miller describes a large collection of mammals from the Andaman and Nicobar Islands, in the course of which he names a number of mice, as well as other forms. No less than thirty-five species of mammals are definitely recognised from these islands. Another paper by the same author, dealing with oriental mammals, based on specimens collected by Dr. W. L. Abbott on the islands of the Malay and China seas, appears in the *Proceedings* of the Philadelphia Academy for March, and likewise contains descriptions of a number of forms regarded as new. In a third contribution, published in the journal last mentioned, Mr. A. E. Brown describes a collection of reptiles and amphibians from Borneo and the Liu-kiu Islands, in the course of which a few new names are proposed. In the case of mammals, forms inhabiting different islands, no matter how closely related, are regarded as distinct.

THE *Lancet* of June 21 publishes the report of a lecture delivered by Dr. Rose Bradford before the University College Medical Society on the relation of biology to medicine. After remarking that the subject may be regarded from three points of view—from its educational value, from its relation to practice, and the influence which it has exerted, and probably will exert, on the progress of medical research—the lecturer calls attention to the value of biological study, and more especially to the work of the field-naturalist, as a means of promoting accurate observation. Biological studies, both anatomical and physiological, have a further great advantage to the medical student in giving him a broader conception of the complexity of living matter than if he confines his studies to the human subject. In regard to the relation of biological study to medical practice and research, Dr. Bradford emphatically urges its importance, pointing out the number of diseases now definitely known to be due to animal or vegetable organisms, such as malaria and other blood-affections, and the morbid processes originated by the presence of funguses. It is further suggested that the true nature of cancer may be discovered by biological rather than by purely pathological researches. The lecture concludes by emphasising the importance of a careful study of variation and heredity to the medical practitioner who hopes to advance his profession.

THE Report of the Field Columbian Museum of Chicago for 1900–1901 indicates a continued and rapid progress of this institution. "Inappropriate and undesirable material," writes the director," is constantly disappearing, to be supplanted by that which is nearer the standard, and the Museum is doing *museum* work; while the laboratory and the study are not neglected, yet the fact that the Museum is dedicated to the enlightenment, instruction and in a measure to the entertainment of the public is not ignored, and those things calculated to advance this policy are those that most engage the attention of the officers of the institution. As a natural consequence, the general appearance of the Museum is never the same, constant additions, changes and renewals, &c., making the exhibition halls always fresh and inviting." The Field Museum was one of the first to adopt the system of mounting the larger mammals on artificial groundwork in imitation of their natural surroundings, and the Report before us contains a photograph of a big-horn sheep and another of a "sounder" of wart-hogs taken from groups in the Museum, which serve to show the careful and realistic manner in which the plan is carried out. An exhibit of much interest is a model of a limestone cave, with natural stalactites and stalagmite, and specimens of the animals which inhabit such situations. This model is lit up by electricity. The idea is so excellent that it might be adopted by other museums.

THE Hull coins and tokens in the Hull Museum have been described by Mr. William Sykes, an authority on the subject, and issued as one of the illustrated penny guides to th collections of the Museum. We have previously drawn attention to this excellent series of museum publications, which is due to the energy of the curator, Mr. T. Sheppard.

THE sixth annual report of the New York Zoological Society gives a very favourable account of the progress of the "zoological park" now established on the northern confines of New York, so far as the plans of the Society have yet been carried out. The objects in contemplation by the founders of the association were the creation of a zoological garden with a special view to the preservation of the larger native animals of North America (now, alas! fast becoming extinct) and the general promotion of the science of zoology. Although the Society is of a private nature, its relations to the city authorities are of the closest kind, and are pronounced in the report on the whole to be in an extremely satisfactory condition. The various buildings in the park are making good progress. One of the chief of them, the "Primates' house," was completed and opened in December last with a series of 114 living specimens of the order Quadrumana, amongst which were two large examples of the rare Gelada baboon of Abyssinia, besides orangs, chimpanzees and gibbons. Of the collections of bears and the herds of prongbucks and other animals, good reports are also given, but as the new "park" contains an area of some 260 acres, it will take some time to fill it. We are glad to see that the scientific element is well represented on the council of of the Society, as is testified by the names of Dr. Allen and Mr. Chapman, of the American Museum of Natural History, and of Mr. H. F. Osborn, of Columbia University. Besides these authorities, the director, Mr. W. T. Hornaday, is well known in zoological circles. The report is illustrated by a front view of the new Primates' house (Fig. 1), a sketch of the herd of prongbucks (Fig. 2) and other good plates. The present number of members of the Zoological Society of New York is stated to be 1182, which in such a populous and wealthy city might well, we think, be considerably increased if such a valuable institution were supported as it ought to be.

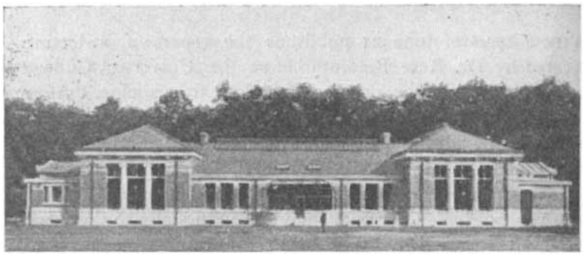

FIG. 1.—Primates' House.

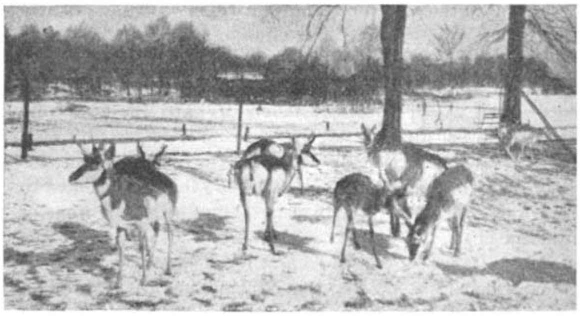

FIG. 2.—Prong-horned Antelope Herd in 1902.]

THE harpoon is the most complicated of the devices invented by uncivilised peoples. The harpoon is the climax of piercing inventions, and may be held in the hand or hurled from it with or without the aid of devices for propulsion. It has no limits in its application, being equally efficient on the land, in the air, in the water or through the ice, at long range or short range, with short shaft or long shaft, some examples being known in which the shaft is 100 feet in length. The simplest forms have three rude parts; the most highly developed have a score or more. With characteristic detailed description and wealth of illustration, Dr. Otis T. Mason has published a monograph on "Aboriginal American Harpoons: a Study of Ethnic Distribution and Invention," in the Report of the U.S. National Museum for 1900 (1902, p. 189). As the old whaleship has been replaced by the ship driven by steam, so the Eskimo at present kills the seal, the walrus, the whale and the Arctic land mammals with a rifle and explosive bullets instead of the ancient harpoon. Should the Eskimo use his great weapon at all it will be to retrieve his game on the edge of the ice after it is shot, and not as a killing device.

AN industry that promises to make progress in Russia consists in the manufacture of oil cakes from the seeds of the sun-flower, and (says the *Engineer*, June 20) good results have already been obtained. The seed with a proper crushing and treatment yields, roughly, 23 per cent. oil, 40 per cent. oil cake and 37 per cent. stalk; the stalk is also used for driving the machinery of the mill, and the ash by being further treated produces 25 to 30 per cent. of potash.

"THE Niagara Falls Power Plant as a Factor in Engineering Development" forms the subject of an instructive and impressive article in the editorial columns of the *Engineer* (Cleveland, June 2). The power of the Falls is practically unlimited, for the amount of falling water has been estimated by Prof. Unwin at 300,000 cubic feet per second, and this amount at a head of 165 feet would generate 10,000,000 horse-power. The plant as put down eleven years ago consisted of two-phase alternating current dynamos of 5000 horse-power (250 revolutions per minute), with a voltage of 2200 and a "frequency" of 25 cycles per second; these were coupled to vertical turbines placed in the wheel pit by shafting 136 feet long. The turbines were of double design, whereby at normal load the lifting action of the escaping water would balance the weight of the revolving parts of the machine. This plant, after eleven years' running, is about to be enlarged and a considerable increase of power derived from the falling waters, and thus we find record again broken at Niagara, where three generators (each of 10,000 horse-power) will be placed in the power house on the Canadian side and will form the nucleus of a plant with a 100,000 horse-power capacity. These generators will be double the size of the old ones and three phase instead of two phase, with a voltage of 12,000 as against the 2200 used before, and the "frequency" and speed will be the same, namely, 25 cycles per second of the former and 250 revolutions per minute of the latter. The transmission voltage in all probability will be fixed at 60,000, which, if adopted, will be 10,000 volts higher than that used in California by the Standard Electric Company on their famous long-distance line.

BOTANISTS who are desirous of filling gaps in their herbaria of cryptogamic plants will be interested to know that Mr. J. Brunnthalers of Johann Straussgasse, Vienna, has published a list of these plants which are for exchange or for sale. The series of Pteridophyta is exceedingly meagre, but the remaining groups are fairly well represented.

A BIBLIOGRAPHY of the analytical chemistry of manganese from 1785 to 1900 has just been published by Messrs. H. P.

Talbot and J. W. Brown, and forms part of vol. xli. of Smithsonian Miscellaneous Collections. The same volume contains a compilation of the statistics of the chemical societies of the world for the year 1900, by Dr. H. C. Bolton.

ACCORDING to a new patent of the Chemische Fabrik Griesheim-Elektron, lead dioxide is now produced electrolytically from a solution of an alkali chloride in which litharge is suspended. The dioxide is formed at the anode by the action of nascent chlorine and sodium hypochlorite on the sodium plumbite produced from the litharge and the sodium hydroxide set free at the kathode. No loss of chlorine takes place at the anode during this electrolytic process.

VOL. xxxvii. of the *Proceedings* of the American Academy of Arts and Sciences contains the results of an investigation of the decomposition of mercurous chloride by dissolved chlorides, by Messrs. T. W. Richards and E. H. Archibald. It is shown that this decomposition is quite considerable if the chloride solutions are fairly concentrated, a point of considerable importance in the analytical determination of mercury as mercurous chloride. The action is not of a catalytic nature, but a definite condition of equilibrium is set up, the dissolved mercury existing probably in the form of a complex ion represented by the formula $HgCl''_4$ in the solution.

WHILE admitting that the evidences of embryology, vestigial traces, and geographical distribution have rendered it indisputable that species have arisen in our world, not through creation in each fresh case, but through descent from other kindred species with variation, Mr. James B. Johnston maintains, in an article "What About Natural Selection?" in the *Contemporary Review* for July, that the proved influence of natural selection is being written down as less and less every day. The article is concerned only with the evidence of palæontology.

THE additions to the Zoological Society's Gardens during the past week include a Vervet Monkey (*Cercopithecus lalandii*) from South Africa, presented by Mr. J. M. Hemingway; an African Tantalus (*Pseudotantalus ibis*) from West Africa, presented by Mr. C. T. Reaney; two Black Salamanders (*Salamandra atra*), an Alpine Newt (*Molge alpestris*) from the Alps, presented by the Rev. J. W. Horsley; a Common Viper (*Vipera berus*) British, presented by Mr. E. Ball; a Chacma Baboon (*Cynocephalus porcarius*), a Natal Sternothere (*Sternothoerus sinuatus*), from South Africa, a Ludio Monkey (*Cercopithecus ludio*) from West Africa, two Grey Lemurs (*Hapalemur griseus*) from Madagascar, two Azara's Opossums (*Didelphys azarae*) from La Plata, a Botta's Snake (*Charina bottae*) from North America, deposited.

OUR ASTRONOMICAL COLUMN.

CHANGES ON THE MOON.—The June number of the *Century Magazine* contains a popular account of the observations of the moon made by Prof. W. H. Pickering at Flagstaff, Arizona, and Jamaica, illustrated with pictures from drawings and photographs. Previous workers have already shown that some markings on the lunar surface were in all probability of a variable nature, but the new observations demonstrate beyond doubt that the surface of the moon is subject to distinct changes, and Prof Pickering gives some very decisive instances where radical alterations have actually been observed. Attention also is drawn to the existence of seas, canals and lakes on our satellite's surface, terms which have very generally been adopted with reference to the planet Mars, but which are employed here with the full understanding that they do not imply in any way the existence of water in the liquid form. These canals are described as being smaller than those on Mars, but broader in proportion to their length; in colour they are grey and yellowish-white. Many of the changes on the lunar surface are caused by the growth, as Prof. Pickering states, of the lunar vegetation itself, and he quotes a particular region situated just to the right of the central peaks of Eratosthenes where he observed the most marked change; reference is further made in some detail to the changes observed in some of the canals and lakes. The importance of these observations to selenography and the great interest attaching to them should undoubtedly stir up a new desire in many workers to follow and continue these researches, which require no very great instrumental equipment.

REMARKABLE NAKED EYE NEBULOSITY.—Mr. W. H. Robinson, writing from the Radcliffe Observatory, Oxford, sends us a description of a curious object observed by him on May 28. Whilst observing with the Radcliffe transit circle at 11h. 19m. G.M.T., his attention was directed to a nebulous object about eight degrees from the zenith. "It was small, but bright and well defined, elliptic in form (major axis 2°, minor axis 1°·5), and situated about half-way between η Ursæ Majoris and α Lyræ, but a few degrees south. The object very much resembled the Præsepe when that cluster is visible in a somewhat hazy sky, an atmospheric condition which prevailed at this time. At first I supposed the object to be a comet, but was soon disillusioned on this point, for in a few minutes its evanescent character was revealed, and, gradually fading, by 11.30 G.M.T. it had entirely disappeared."

The position of the nebulosity was found by means of a star atlas to be

R.A. 16h. 15m.
Decl. + 44°.

The sky was watched until midnight for any return of the phenomenon, but nothing was seen except at about 11h. 42m., when a faint patch of light appeared for a few seconds only, about two degrees east of the above position. The luminosity was apparently not of an auroral nature, and Mr. Robinson suggests that it may have been the trail of a meteor, several instances of meteor clouds of this character having been recorded.

Other observations of the object observed on May 28, if forthcoming, would probably enable a determination to be made of its distance and nature.

A THEORY OF VOLCANOES.—In a forcible exposition of a theory which supposes high-tension terrestrial electricity to be the immediate cause of volcanic eruptions, M. A. Taquin, in the *Revue Scientifique* for June 14, brings together some remarkable observations of the connections between volcanic, solar, magnetic, and terrestrial electrical phenomena. The author provides for the disruptive forces and the heat which attend volcanic actions, by the discharge of this high-tension electricity, and then connects this electricity with the previously observed relations between solar, and terrestrial electrical and magnetic phenomena.

M. Taquin accounts for the remarkably sudden deaths of the inhabitants of St. Pierre by supposing that they were electrocuted, and proceeds to urge, in the following words, the establishment of observatories in volcanic districts:—"I am convinced that the study of the manifestations of terrestrial electricity in such districts will give us the means of foreseeing these volcanic eruptions."

THE FRENCH GEODETIC MISSION TO THE EQUATOR.—Commandant Bourgeois gives an interesting and detailed account of the first year's work of the French geodetic expedition in the *Bulletin de la Société Astronomique* (June, 1902). M. Bourgeois first explains that the *raison d'être* of the mission is "to determine certain elements by which to calculate the dimensions of the earth," and he then proceeds to answer the following self-imposed questions:—(1) What are these elements? (2) How are they to be determined? (3) Why is it necessary to make the observations in a place which is so distant and so difficult to reach? In answering these questions the author describes the inauguration, the organisation, and the journey of the mission to Riobamba, Ecuador, S.A., and also explains why Riobamba was fixed upon as the centre of operations. The whole report, which was communicated to the Société Astronomique, gives an instructive account of the work already achieved, and is illustrated by photographs which give the reader a clear idea of the methods pursued by the mission.

OBSERVATIONS OF NOVA PERSEI.—In No. 3796 of the *Astronomische Nachrichten*, Prof. E. E. Barnard gives a brief *résumé* of the various observations of the Nova which were made at Lick subsequent to July, 1901.